January 28, 1980

Orphan Ante

Cleaning Up Abandoned Chemical Dumps Will Cost Billions

By MICHAEL BRODY

IN ONE OF the bitterest takeover battles in recent history, Mead Corp. fought off a determined assault by Occidental Petroleum, which finally was forced to withdraw a near-$1 billion bid for the forest products concern, citing the "ferocity" of Mead's opposition. One of the weapons that Mead used with telling effect was the disclosure that Occidental subsidiary Hooker Chemical was burdened by hundreds of millions of dollars in potential legal liabilities due to suits being brought against it for dangerous dumping of hazardous chemical wastes.

At the height of the Oxy-Mead battle, headlines blared the news that dangerous chemical wastes from Love Canal, a buried waste dump abandoned for 30 years in upstate New York, had seeped into surrounding homes and yards, reportedly causing miscarriages and birth defects and forcing evacuation of the community. The Love story is far from over: Hooker is being sued for $124 million by the federal government and for over $2 billion by local residents.

Hooker denies liability and is defending the suits; it is also contesting a California suit over groundwater contamination where the state claims a $15 million-plus clean-up will be needed. A settlement reached by Hooker in an earlier action in Michigan is expected to cost the company approximately that amount. But some observers feel the final bill could run substantially higher, given the potential costs of the company's commitment to reducing toxic contamination of groundwater under the site to "non-detectable levels."

Plenty of Company

Hooker is not alone. The dumping of toxic chemical wastes is now being recognized as a major national health hazard. Pesticides which cause sterility and cancer in concentrations as low as one part per trillion have poisoned drinking water supplies in California. Tens of thousands of 55-gallon chemical waste drums were discovered secretly dumped in an isolated Kentucky area now known as the "Valley of the Drums"; many are ancient, rusted, and leaking unknown chemicals into soil and streams. Over 100 tons of poisonous mercury have found their way into the swamps and streams surrounding a no-longer-used chemical plant in New Jersey.

Across the country thousands of chemical plants, as well as factories in other industries which generate chemical wastes, have dumped millions of metric tons of toxic wastes into open ponds, lagoons and landfills—most of them on their own properties—which lack tiled floors and walls to prevent seepage. Dangerous chemicals have gradually contaminated acres of soil, as well as groundwater, wells, streams and rivers.

The entire chemicals industry is now facing a huge tab for these practices. To date, only a dozen federal suits have been brought, but the total is expected to reach 50 by the end of this year. In addition, the chemical producers are in for an unknown number of state suits. Moreover, any single legal action could lead to charges and claims for damages against dozens of firms.

For example, a suit filed by the Justice Department against the Kin-Buc Landfill, a 220-acre site in Edison, N.J., has led to discovery proceedings in which more than a score of major chemical firms have been identified as sources of wastes which allegedly were improperly disposed of at the site. These include such companies as Allied Chemical, American Cyanamid, Ashland Chemical, Celanese, Dart Industries, Drew Chemical, Diamond Shamrock, Du Pont, Exxon, FMC, GAF, Gulf, Hatco, Inmont, Koppers, Monsanto, NL Industries, Olin, Pennwalt, Reichhold, Stauffer Chemical, Tenneco, Union Carbide, Uniroyal and Witco.

At many such sites, particularly where companies dealt through middlemen such as waste haulage and disposal outfits, the firms which generated the waste may argue that they were unaware that the wastes were being disposed of improperly and dangerously. But in cases of so-called orphaned sites, where the dump operator has gone out of business or is unable to pay for the clean-up, the government is expected to try to hold the sources of the waste liable for the clean-up costs. Moreover, most chemical wastes have been disposed of by producers on their own properties, the clean-up bill for which must be borne by the companies themselves.

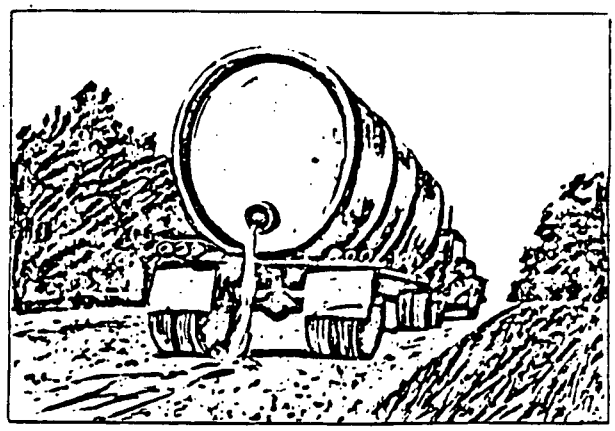
$10 Billion-plus Bill

Together with others that throw off substantial amounts of hazardous chemical wastes, such as leather, paper and metal fabrication, the chemicals industry may have to ante up at least $10 billion just to clean up orphaned dump sites. A more extreme estimate, by the Environmental Protection Agency, is that the cost of cleaning up *all* dump sites (orphaned dumps, active independent sites, and companies' own facilities) could run as high as $50 billion. The amount that industry will actually be forced to cough up will depend both on the outcome of federal and state litigation, which could take years, and how Congress disposes of President Carter's proposed $1.6 billion "superfund" to finance the beginning of the clean-up. In any case, the total bill threatens to cast a pall over the affected industries for years to come.

The chemicals industry is lobbying hard against several revisions of the "superfund," most of which would force industry to pay three-quarters of the cost of a clean-up fund, probably through a special fee to be imposed on petrochemical feedstocks; the oil industry would pass along the charge in full to the chemical companies and they, in turn, would pass on part of it to industrial customers.

Some oil, paper and auto companies are reportedly talking about a possible 50-50 compromise on industry and federal government funding for the clean-up. But the Chemical Manufacturers Association wants the fund limited to the rehabilitation of orphaned sites where the disposal company has gone out of business and the dumpers cannot be identified. The Association insists that such sites are not the industry's responsibility, that casual waste dumping was a nationally condoned practice for decades, and that orphaned dump sites are simply a "social problem" for which the taxpayer should pick up the full tab. (The CMA also wants to tighten the liability provisions of the legislation, so that a single company cannot be held responsible for the costs of sanitizing a dump site where its barrels or wastes are the only ones that can be identified.)

Federal regulators reply that the industry is now refusing to take collective responsibility for the results of years of irresponsibility. Besides the cost of cleaning up orphaned sites, still-active independent sites and those on the properties of the waste generators themselves, federal regulations slated to begin in May (and already over a year and a half overdue), will set expensive new standards for the handling and disposal of hazardous wastes. And white collar crime proposals in the new federal criminal code revision (approved by the Business Roundtable last year, but now the target of furious attacks by other business lobbyists), would impose corporate fines of up to $1 million, plus individual fines and prison sentences for corporate executives who "recklessly endanger" the public health and safety by violations of such rules.



The annual capital cost of compliance with the new hazardous waste regulations is put by the Environmental Protection Agency at around $800 million and by CMA at around $2 billion, in addition to substantial increases in annual operating costs. Waste disposal experts say that the latter figure is an exaggeration but note that companies which have simply been paying cut-rate, fly-by-night truckers to get rid of the stuff for them may well find their disposal costs increased by a factor of ten—which in some cases could mean a substantial jump in overall operating costs. (Last year, one such haulage and disposal contractor in North Carolina got rid of a load of toxic PCB by simply leaving the spigots on his tank-truck open over 200 miles of back road, leaving behind him 40,000 tons of carginogenic dirt.)

The reaction of major chemical companies to the outcry over hazardous wastes has been mixed. At Dow Chemical, managers have been breathing audible sighs of relief over a decision several years ago to make a major investment in new incineration facilities—part of a deliberate move to handle internally as much of the firm's hazardous wastes as possible. High-temperature incineration is one of the more expensive ways of dealing with hazardous wastes—environmental manager Jerry Martin notes that the cost of a medium-size rotary kiln incinerator is in the $10-$20-million range—but it is also one of the most highly recommended.

No One Knows

Du Pont has reacted by ordering new inspections of the company's own hazardous waste facilities around the country, including tests for possible groundwater pollution. Du Pont has estimated that regulations under discussion by EPA could impose a capital cost of up to $200 million on the firm—for installing impermeable linings in unlined holding pools and lagoons, seepage monitoring and water treatment facilities, etc. But environmental manager James Riley says cautiously that inspections have revealed no major problems, and that the company knows of no pending lawsuits.

However, the threat of a wave of lawsuits similar to those brought against Hooker has clearly alarmed and angered much of the industry. CMA President Robert Roland suggests angrily that Hooker was forced into its $15-million-plus settlement in Michigan by the fear of the far higher settlement which might have been imposed by an "emotional" jury following "litigation in the press." Given the "unfair presumption of guilt" which an out-of-court settlement carries with it, he adds, "If I were a company executive, I wouldn't settle, I would litigate these suckers to the very end."

The problem with trying to narrow the $10-$50 billion range of nationwide clean-up cost estimates is that the facts needed to compute those costs more accurately simply aren't known. No one knows how many dump sites are out there, or how much hazardous material is in them, or how much ground and water-table contamination has taken

place, or how much waste different industries generate each year, or how much of that is hazardous, or how much a "typical" site might cost to clean up, or how political policy-makers are going to define "clean."

However, enough evidence can be scraped together on these points at least to confirm that this is indeed the order of magnitude of the probable costs involved. EPA is supposed to be preparing a comprehensive national list of waste dump sites; it claims that this will take at least two or three years, a statement which has angered environmental and public health activists already critical of the agency's delays.

The EPA appears to be depending on sites being reported to its regional offices or to state agencies. Some individual states are moving quickly: New Jersey, a major petrochemical producer and dumping ground for wastes, is preparing its own list of all dump sites in the state; New York will have one by April. Michigan has already published a mammoth listing of over 50,000 sites of potential groundwater pollution, ranging from chemical waste dumps to abandoned gas stations with leaky storage tanks.

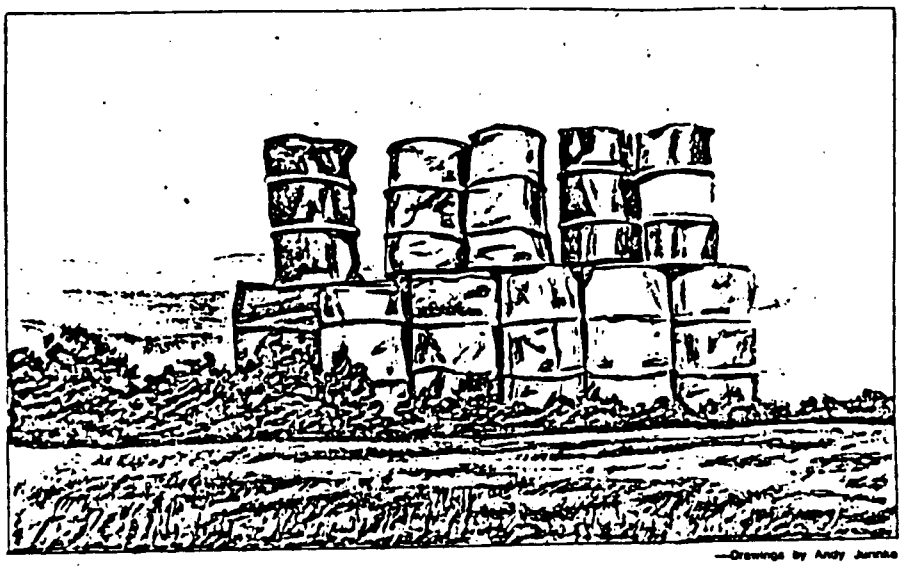
Using an alternative approach, the House Subcommittee on Oversight and Investigations, chaired by Bob Eckhardt (D., Texas), surveyed the nation's 53 largest domestic chemical producers on waste disposal practices going back to 1950. Many firms had no systematic accounting procedures for keeping track of how much waste they generated, hazardous or otherwise, or where it went. Records in some cases were totally lacking, and companies had to depend on the memories of aging loading dock foremen in whose hands the disposal of hazardous substances had been left.

For the 53 companies, which operated 1,005 manufacturing facilities, the Eckhardt Subcommittee came up with a list of 3,353 dump sites. The one-third of these owned by the companies themselves (by and large on the same property as the chemical plant generating the wastes), accounted for 94% of the 762 million recorded tons of waste dumped. Only 6% went to the 2,000-plus independent sites, which include municipal dumps and sites owned by private waste disposal firms. To obtain the cooperation of the companies involved, and avoid lengthy delays, the Subcommittee did not ask how much of these wastes might be considered hazardous or what shape the company-owned dump sites were in.

Down in the Dumps

By adding in the many smaller chemical manufacturers, and the thousands of firms in other industries which generate large volumes of chemical wastes, the total number of waste disposal sites should clearly go over the 10,000 mark. A study done for the EPA by Fred C. Hart Associates, a consulting firm, estimated that the total number of active and disused dump sites in the U.S. could range as high as 51,000. But this was derived from estimates by regional EPA offices based on dubious evidence, and most people in the waste disposal industry believe it to be much too high.

George Kush, of the National Solid Waste Management Association, a waste disposal industry trade group, notes that when the smaller chemical manufacturers are included, the proportion of hazardous wastes dumped at independent sites is higher than in the case of the major companies surveyed by the Eckhardt Subcommittee. "We think about 13% of the wastes are what our members are getting right now. Another 9% we think is going to municipal landfills. The remaining 78% or so is probably being disposed of by the generators on their own property, with some illicit dumping as well."



—Drawings by Andy Jurinka

But that, he stresses, is just the waste industry's estimate. "We know how much we're handling, but nobody knows how much is out there. In volume, probably most of our business right now is with the chemical industry. But that's going to change drastically, because we're finding these other industries are now waking up to the fact that they're producing hazardous wastes too and they're starting to come to us." (The economic impact analysis for the provisional hazardous waste regulations, which were mandated by the 1976 Resource Conservation and Recovery Act, or RCRA, lists such significantly affected industries as chemicals—including pesticides, explosives and dyes; metal smelting, refining, electroplating and finishing; leather tanning and finishing; and textile dying and finishing.)

Although some sites have cropped up in rural areas, most are concentrated where the petrochemicals industry is—which means 75% are in areas of rivers, floodplains and major aquifers (underground water tables and pools) where the risk of contaminating drinking water supplies is highest.

And the proportion of hazardous wastes being improperly and dangerously disposed of is unquestionably great. The EPA estimates it at 90%; the waste disposal trade group puts it at 70%-80%; and industry sources admit that most of the storage ponds and lagoons in which wastes have been dumped have no impermeable linings to prevent dangerous chemicals from leaching through into the subsoil. Incidents of public exposure to pesticides and other poisonous chemical wastes have shown a clear potential public health risk.

The levels of concentration of known and suspected carcinogens which pose threats to public health in the air or water are bitterly disputed by the industry. But studies done for the state of New Jersey in response to public alarm over its reportedly high cancer rates (which are in fact equaled or exceeded in other highly industrial areas) show definite correlations between the "cancer corridor" areas of high cancer incidence and areas of heavy industrial air and water pollution, petrochemical production and hazardous waste dumping.

New Regulatory Costs

The potential cost of solving the problem is even more difficult than working out the physical extent and location of it. In some cases clean-ups may not be possible, particularly where large volumes of highly poisonous chemicals have been dumped into rivers. Allied Chemical was fined an unprecedented $13.2 million (later reduced to $5 million after the company agreed to set up an $8 million clean-up fund) for the dumping of kepone, a highly poisonous chemical, into the James River in Virginia; an attempt at removing it would probably cost several hundred million dollars and is unlikely to be undertaken. This is also the case with the dumping of PCBs into the Hudson River above New York City and an Olin plant's dumping of tons of highly poisonous mercury into the Niagara River near Buffalo, where the river water was already rated a public health hazard because of dumping by other polluters.

The potential maximum clean-up costs of $50 billion cited by EPA administrator Barbara Blum before Congress a few months ago appears to be loosely based on the Hart study, and is dismissed as a "gross exaggeration" by most people in the waste disposal business. The industry trade group's $10 billion (for orphaned sites alone) was reached by looking at the provisional listing of hazardous waste sites in New York State (a more comprehensive list will be out in April), estimating that clean-up cost and extrapolating from New York's share of national chemical waste generation.

But estimating per-site costs depends on policy decisions by politicians about how much clean-up is necessary to satisfy the public—decisions which will be subject to heavy industry lobbying. The costs of containing an immediate crisis, and preventing the further contamination of land and water, would be substantially less than the costs of also cleaning up the worst of the existing ground and water contamination — which could still be far lower than the costs of reducing the contamination to below levels of concentration believed to affect public health.

Where underground water must be decontaminated—by pumping it out through wells and treatment facilities—most of the average per-site numbers circulating are in the $5-$10 million range, which means that it might be cheaper simply to bring in a new community water supply from outside the area. On the other hand, in densely populated industrial areas where water demand is high, abandoning entire underground aquifers because of the costs of cleaning them up may not be feasible.

Where the problem is simply one of surface contamination and of removing wastes to properly secure facilities the costs should be substantially lower; the heaviest costs are expected to be at the abandoned and orphaned sites which account for a relatively small proportion of the total waste volume, but where the expense of sampling and identifying the contents of thousands of unmarked barrels or of solid waste landfills can run quite high. At the producers' own facilities the nature of the wastes, the dangers they pose and the best disposal method for them are at least known.

Moreover, experts say that there is a sharp learning-curve effect in dealing

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with these sites, so little cleanup work has been done that the best techniques for dealing with a particular type of problem are still being worked out, and per-unit costs can be expected to drop sharply as experience is gained.

Love Canal Experience

Frank Rovers, of the Canadian firm Conestoga Rovers, which is handling the Love Canal project, notes that "At Love Canal, the initial per-unit costs were much higher (than in later stages of the work), because of the learning curve. There are many cleanup jobs that cost less than $1 million; there's a large number of small jobs and a much smaller number of large jobs. I think that the average cost is significantly less than big jobs in the $5-$10 million range. And I think we had better hope it is significantly less because it'll take our Gross National Product to look after these problems if it isn't."

The increased costs to a particular chemical company of disposing of its hazardous wastes safely under the new government regulations are difficult to estimate. A 1978 EPA study indicated that the capital costs of installing proper containment and treatment facilities at a hypothetical 1,000-foot-square surface impoundment could run about $800,000 at today's construction costs.

George Kush, of the waste disposal industry group, says that "we can tell you what our average costs are for the different technologies (of proper disposal), but that doesn't help if you don't know what some companies are paying right now. If they're just dumping the stuff in a sanitary landfill or paying someone to get rid of it, they're paying a hell of a lot less. They might be paying $5 a drum, while just landfilling a drum (in a secure facility) might run you $30 a drum; treatment might go anywhere from $20 to $50 a drum (depending on contents); incineration might run from $40 to $225 a drum."

But he adds: "The vast majority of wastes are amenable to some sort of treatment technology. Nothing is going to render each one totally innocuous and knock it down to the basic elements. Incineration itself, for example, will produce its own hazardous waste; from the scrubber solutions, you end up with a sludge (of residual toxic substances) which has to be put in a secure landfill."

What the disposal firms are seeing now is increasingly concentrated waste from which generators have tried to recover as much useful material, and especially energy content, as possible. Some wastes can be sold to other industries as feedstocks. Others can be neutralized chemically, or solidified into cement-like blocks and buried, or injected through deep wells into porous rock formations far underground.

Siting Battles

However, no technology is 100% effective; there are always residual hazards of possible air or water pollution. And no one wants to have the final treatment or incineration or disposal done in his community (and or trucks full of dangerous chemicals rumbling through his streets), even though new, secure sites, far from underground water supplies, are clearly needed to replace the worst of the old ones. (When no dump site in this country would accept it, Allied Chemical was forced to ship the last of its kepone to West Germany for burial in an abandoned salt mine.)

The major waste disposal companies (*Barron's*, May 14)

> No technology is 100% effective; there are always residual hazards of pollution.

have seen their business rise dramatically over the last few years. Those handling hazardous wastes — including such large public companies as Browning Ferris, Waste Management, SCA and Rollins — anticipate further, substantial growth. But because of violent public opposition to new disposal sites and operations, the costs of drawn-out siting and permit battles, and the potential legal liabilities posed by the hazardous materials themselves, they're also clearly in a high-risk business.

Top priority for the cleanup effort, however, appears to be pushing some form of the "superfund" legislation through Congress. George Kush comments: "We support a superfund concept; how to generate the funds for that is a controversial issue. But our position is, let's get the sites cleaned up. As long as you leave them out there, the public is not going to be receptive to new sites that do properly manage hazardous wastes in this country. Until they see that there's a mechanism for cleaning up the old ones, you're going to have public opposition to anything you try to do."